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Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Air Force **DATE:** February 2012

APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE							
3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 1: <i>Basic Research</i>				PE 0601108F: <i>High Energy Laser Research Initiatives</i>							
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	12.748	14.258	13.094	-	13.094	13.326	13.554	13.816	14.068	Continuing	Continuing
615097: <i>High Energy Laser Research Initiatives</i>	12.748	14.258	13.094	-	13.094	13.326	13.554	13.816	14.068	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program funds basic research aimed at developing fundamental scientific knowledge to support future Department of Defense (DoD) high energy laser (HEL) systems. The HEL Joint Technology Office (JTO) sends these funds to multi-disciplinary research institutes for projects on laser and beam control technologies. In addition, funding supports educational grants to stimulate interest in HELs. These educational grants are used for educational tools, scholarships, and summer intern employees in military laboratories. Efforts in this program have been coordinated through the Reliance 21 process to harmonize efforts and eliminate duplication. This program is in Budget Activity 1, Basic Research, because it funds scientific study and experimentation.

B. Program Change Summary (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	13.198	14.258	14.094	-	14.094
Current President's Budget	12.748	14.258	13.094	-	13.094
Total Adjustments	-0.450	-	-1.000	-	-1.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.382	-			
• Other Adjustments	-0.068	-	-1.000	-	-1.000

Change Summary Explanation

FY11: Other Adjustments include -0.068 General Congressional Reductions.

Decrease in FY 2013 is due to higher Department of Defense priorities.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Title: Major Thrust 1.	8.537	9.349	8.494	-	8.494

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
<p>Description: Improve the fundamental understanding of HEL sources, to include solid state, free electron, and gas laser technologies.</p> <p>FY 2011 Accomplishments: Completed research efforts on awarded topics in diode-pumped alkali, free electron, fiber, and bulk solid state laser technologies. Continued overseas efforts to leverage international technology advancements.</p> <p>FY 2012 Plans: Initiate a new call for and continue research efforts on innovative laser technologies in diode-pumped alkali, free electron, fiber, and bulk solid state technologies. Continue overseas efforts to leverage international technology advancements.</p> <p>FY 2013 Base Plans: Continue research on innovative laser technologies in diode-pumped alkali, free electron, fiber, and bulk solid state laser technologies. Continue overseas efforts to leverage international technology advancements.</p> <p>FY 2013 OCO Plans: N/A</p>						
<p>Title: Major Thrust 2.</p> <p>Description: Improve the fundamental understanding of beam control technologies, as they relate to HEL applications. Conduct research in atmospheric characterization, metrology, control systems, algorithms, and beam control component technology.</p> <p>FY 2011 Accomplishments: Completed airborne measurements for mitigation of aero-optics effects. Completed studies to optimize HEL architectures, and optimized size, weight, and complexity of the beam control systems. Continued overseas efforts to leverage international technology advancements.</p> <p>FY 2012 Plans: Initiate a new call for and continue research efforts in innovative beam control architectures. Continue overseas efforts to leverage international technology advancements.</p> <p>FY 2013 Base Plans:</p>		3.487	4.159	3.850	-	3.850

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C. Accomplishments/Planned Programs (\$ in Millions)											
				FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total			
Continue research on innovative beam control architectures. Continue overseas efforts to leverage international technology advancements.											
FY 2013 OCO Plans: N/A											
Title: Major Thrust 3.				0.724	0.750	0.750	-	0.750			
Description: Fund educational grants intended to stimulate interest in HELs among students.											
FY 2011 Accomplishments: Provided scholarships and internships to support college students studying HEL degrees. Provided grants to Service Academies to stimulate HEL studies among military cadets. Funded publication of journals and continuing education for professionals in the HEL field.											
FY 2012 Plans: Provide scholarships and internships to support college students studying HEL degrees. Provide grants to Service Academies to stimulate HEL studies among military cadets. Fund publication of journals and continuing education for professionals in the HEL field.											
FY 2013 Base Plans: Provide scholarships and internships to support college students studying HEL degrees. Provide grants to Service Academies to stimulate HEL studies among military cadets. Fund publication of journals and continuing education for professionals in the HEL field.											
FY 2013 OCO Plans: N/A											
Accomplishments/Planned Programs Subtotals				12.748	14.258	13.094	-	13.094			
D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
E. Acquisition Strategy N/A											

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<u>F. Performance Metrics</u> Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		